CHEMISTRY NMDCAT

(UNIT–2)

TOPICS

✓ **ATOMIC STRUCTURE**

Q.1 **The wavelength of Lyman Series lies in the region**

a. Visible
b. U.V
c. I.R
d. X-rays

Q.2 **Positive ions are formed from the neutral atom by the loss of**

a. Protons
b. Neutrons
c. Electrons
d. Positrons

Q.3 $\frac{e}{m}$ **value for positive rays is maximum for**

a. Helium
b. Hydrogen
c. Oxygen
d. Nitrogen

Q.4 **Lines of Paschen series are produced when electrons jump from higher orbit to _____ orbit**

a. 1^{st}
b. 2^{nd}
c. 3^{rd}
d. 4^{th}

Q.5 **According to Bohr's atomic model, radius of first orbit of hydrogen atom is**

a. 0.529Å
b. 2.11 Å
c. 4.0 Å
d. 0.52 m

Q.6 **An orbital can have maximum two electrons with opposite spins according to**

a. Heisenberg's Principle
b. Auf Bau Principle
c. Hund's rule
d. Pauli exclusion Principle

Q.7 **Cathode rays can derive a small paddle wheel placed in their path. This verifies that they are material particles and have certain**

a. Wavelength
b. Velocity
c. Frequency
d. Momentum

Q.8 **The mass of a proton is 1837 times more than that of _____**

a. Positron
b. Electron
c. Neutron
d. α-Particle

Q.9 **According to Plank's Quantum theory, Greater the energy of electromagnetic radiation, lesser will be the _____**

a. Wavelength
b. Frequency
c. Wave number
d. Both "b" and "c"

Q.10 **The limiting lines shows that the energy difference between the first level and the _____ level is the ionization energy of the hydrogen atom**

a. Second
b. Third
c. Fourth
d. Infinite

Q.11 **Which of the following is expression of Moseley's law**

a. $\sqrt{v} = a(Z-b)$ b. $v = a(Z-b)$

c. $v = a\sqrt{Z-b}$ d. $v = b(Z-b)$

Q.12 Magnetic quantum number is related to

a. Size of orbit b. Shape of orbital

c. Orientation of orbital d. Spin of electron

Q.13 For which of the following Bohr's theory is not applicable

a. H b. Li^{+2}

c. H^- d. He^{+1}

Q.14 Which atomic orbital has highest energy

a. 4d b. 4f

c. 5s d. 5p

Q.15 The value of four quantum numbers of valence electron of an element are $n = 3, \ell = 0, m = 0$ and $s = +1/2$. The element is

a. Li b. K

c. Na d. Sc

Q.16 The atomic number of an element is 35. How many s, p and d-electrons respectively it possesses in ground state?

a. 8, 19, 8 b. 8, 17, 10

c. 10, 15, 10 d. 6, 18, 11

Q.17 The principal quantum number of an atom is related to

a. Orientation of orbital in space b. Spin of electron around its own axis

c. Size of the orbital d. Shape of orbital

Q.18 The third electron of Li atom will have quantum number values

	n	ℓ	m	s
a.	1	0	0	+1/2
b.	2	0	0	−1/2
c.	2	1	0	+1/2
d.	1	1	1	+1/2

Q.19 The ground state electronic configuration of nitrogen atom can be represented as

a. $1s^2, 2s^2, 2p_x^2, 2p_y^1, 2p_z^0$ b. $1s^2, 2s^2, 2p_x^1, 2p_y^1, 2p_z^1$

c. $1s^2, 2s^2, 2p_x^1, 2p_y^2, 2p_z^0$ d. $1s^2, 2s^1, 2p_x^2, 2p_y^1, 2p_z^1$

Q.20 The set of elements which violates Auf bau principle is

a. Cr and Co b. Cu and Co

c. Cr and Cu d. Cr and Mn

Q.21 The shape of 1s, 2s and 3s is

a. Different b. Linear

c. Similar d. Flate

Q.22 The value of n = 3. What are probable values of azimuthal quantum number 'ℓ'

a. 0, 1, 2, 3 b. 0, 1, 2

c. 0, 1 d. 1, 2, 3, 4

Q.23 Which one is the correct order of frequency of radiations?

a. γ -ray > UV rays > red rays> microwave rays

b. UV-rays > γ -rays > red rays > microwave rays

c. Microwave rays > red rays > UV rays> γ -ray

d. Microwave rays > UV rays > red rays > γ -ray

Q.24 **A photon of light moving with energy 3.3×10^{-30} J. The frequency of photon is ($h = 6.6 \times 10^{-34}$ Js)**

a. 500 Hz
b. 0.5×10^{-30} Hz
c. 5000 Hz
d. 2.5×10^{-4} Hz

Q.25 **The nucleon number of $^{16}_{8}O^{-2}$ is:**

a. 8
b. 10
c. 16
d. 24

Q.26 **In a chemical specie there are 26 protons, 24 electrons and 30 neutrons, it may be:**

a. Mn
b. Fe^{+2}
c. Fe
d. Zn^{+2}

Q.27 **The number of unpaired d electrons retained in Cu^{2+} (At. Number of Cu = 29) ions is**

a. 2
b. 5
c. 1
d. 0

Q.28 **Which is incorrect statement**

a. e/m value of electron is 1.7588×10^{11} C/kg
b. Cathode rays can ionize gases
c. Penetration power of neutron is more than electron
d. Wave number ($\bar{v}$) is reciprocal of frequency (v)

Q.29 **Which of the following fundamental subatomic particle is different in number than others in the Fluorine atom?**

a. Protons
b. Neutrons
c. Electrons
d. All are equal

Q.30 **Which of the following sets of quantum number is correct for an electron in 4f orbital?**

a. $n = 4, \ell = 3, m = +4$
b. $n = 4, \ell = 3, m = +1$
c. $n = 4, \ell = 4, m = -4$
d. $n = 3, \ell = 2, m = -2$

Q.31 **Which is not deflected by magnetic field**

a. Neutron
b. Proton
c. Alpha particles
d. Electron

Q.32 **The electronic configuration of a dipositive ion is 2, 8, 17 and atomic mass is 65. The number of neutrons in the nucleus would**

a. 38
b. 65
c. 36
d. 29

Q.33 **Match list I and list II and pick the correct matching from given codes**

I	II
A) Non directional character	1) $2p_x, 2p_y, 2p_z$
B) Application of Hund's rule	2) Zero electron density
C) Nodal surface	3) s-orbital
D) Degenerate orbital	4) $3p_x^2, 3p_y^1, 3p_z^1$

a. A–1, B–3, C–4, D–2
b. A–3, B–1, C–4, D–2
c. A–3, B–4, C–2, D–1
d. A–1, B–3, C–2, D–4

Q.34 **With the increase in value of principal quantum number which one will not change**

a. Size of s-orbitals
b. Energy of p-orbitals
c. Shape of p-orbitals
d. Size of p-orbitals

Q.35 $^{16}_{8}O^{-2}$ **and** $^{20}_{10}Ne$ **are _____ of each other**

a. Isoelectronic
b. Isobars
c. Isotones
d. Isotopes

Q.36 **Which of the following statement is incorrect about positive rays**

a. They travel in straight line perpendicular to the anode surface

b. Their e/m ratio is greater than that of an electron
c. They can be deflected by electric field
d. They produce flashes on ZnS plate

Q.37 Total fundamental sub atomic particles are present in hydride ion (H^-):

a. 1 b. 2
c. 3 d. 4

Q.38 The electronic configuration for elements in subshells is designated by using

a. Joule Thomson effect b. Aufbau principle
c. Heisenberg principle d. Bohr's rule

Q.39 Deduce the number of protons, neutrons, electrons and nucleons from the given specie $^{39}_{19}K$

	Protons	Neutrons	Electrons	Nucleons
a.	19	20	20	39
b.	19	20	19	39
c.	20	19	20	39
d.	19	19	19	39

Q.40 Which of the following is the shape of one of the d-orbital

a.  b. 

c.  d. 

Q.41 The positive charge in nucleus of an atom is due to a fundamental particle called:

a. Neutrons b. Protons
c. Electrons d. Neutrino

Q.42 The shapes of orbitals can be determined by:

a. Spin quantum number b. Azimuthal quantum number
c. Principle quantum number d. Magnetic quantum number

Q.43 The number of degenerate orbitals in p–subshell is

a. 2 b. 5
c. 3 d. 7

Q.44 The isoelectronic pair like argon is

a. Cl^-, K^+ b. F^-, Na^+
c. Cl^-, Na^+ d. He, Ne

Q.45 The total number of orbitals containing electrons, if atomic number of the element is 19

a. 9 b. 6
c. 10 d. 16

Q.46 The atomic number of an atom is the number of

a. Protons plus the number of electrons b. Protons
c. Neutrons d. Protons plus the number of neutrons

Q.47 A(An) _____ is a region of space in which there is a high probability of finding an electron in an atom

a. Shell b. Nucleus
c. Atomic orbital d. Main energy level

Q.48 Cathode rays and canal rays when pass through electric field they will _____

a. Deflect towards negatively charged plate only
c. Deflect towards positively and negatively charged plates respectively
b. Deflect towards positively charged plate only
d. Not deflect towards negatively charged plate and positively charge plate

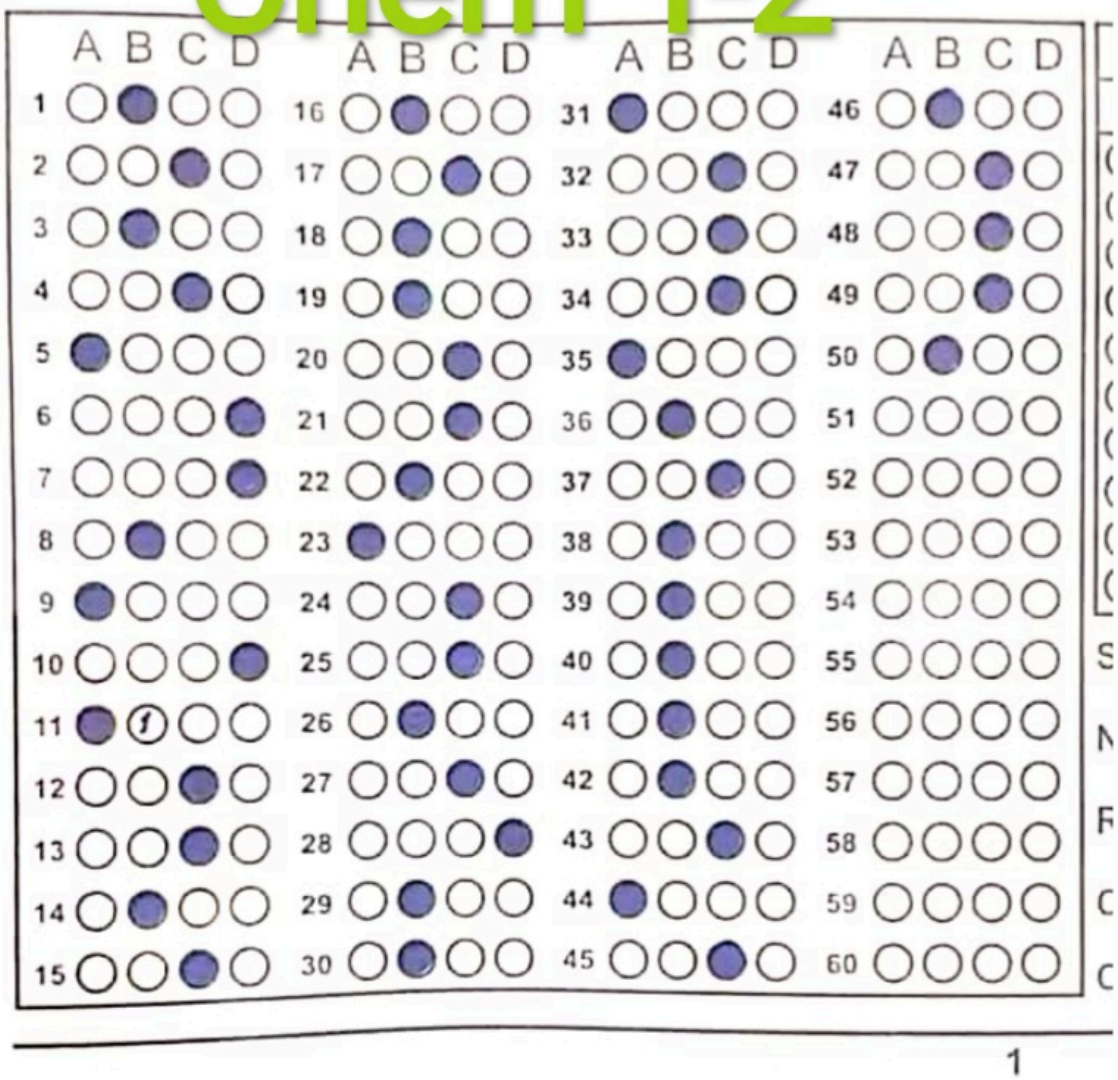
Q.49 Atoms of two different elements having same nucleon number but different proton number are called

a. Isotopes b. Isotones
c. Isobars d. Isoelectronic

Q.50 A di-valent cation having 10 electrons and 24 nucleon number. The number of neutrons are

a. 11 b. 12
c. 10 d. 24

Chem T-2



	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	●	○	○	16	○	●	○	○	31	●	○	○	○	46	○	●	○	○
2	○	○	●	○	17	○	○	●	○	32	○	○	●	○	47	○	○	●	○
3	○	●	○	○	18	○	●	○	○	33	○	○	●	○	48	○	○	●	○
4	○	○	●	○	19	○	●	○	○	34	○	○	●	○	49	○	○	●	○
5	●	○	○	○	20	○	○	●	○	35	●	○	○	○	50	○	●	○	○
6	○	○	○	●	21	○	○	●	○	36	○	●	○	○	51	○	○	○	○
7	○	○	○	●	22	○	●	○	○	37	○	○	●	○	52	○	○	○	○
8	○	●	○	○	23	●	○	○	○	38	○	●	○	○	53	○	○	○	○
9	●	○	○	○	24	○	○	●	○	39	○	●	○	○	54	○	○	○	○
10	○	○	○	●	25	○	○	●	○	40	○	●	○	○	55	○	○	○	○
11	●	①	○	○	26	○	●	○	○	41	○	●	○	○	56	○	○	○	○
12	○	○	●	○	27	○	○	●	○	42	○	●	○	○	57	○	○	○	○
13	○	○	●	○	28	○	○	○	●	43	○	○	●	○	58	○	○	○	○
14	○	●	○	○	29	○	●	○	○	44	●	○	○	○	59	○	○	○	○
15	○	○	●	○	30	○	●	○	○	45	○	○	●	○	60	○	○	○	○

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